1884. At a majority of the older established Signal Service stations in New England the highest temperature for July was recorded in 1876; on the middle Atlantic coast, in Tennessee, the west part of the lower lake region, and at the more southern stations on Lake Michigan, in 1887; on the south Atlantic coast in 1879; in the Ohio Valley, in 1874 or 1881; in the upper Missouri valley, Montana, and Idaho, in 1886; in Arkansas and Indian Territory, in 1884; and on the north Pacific coast in 1885. In other districts the periods of occurrence of the highest temperature were irregular. Among extremely high temperatures reported for July in preceding years by United States Army post surgeons and voluntary observers are, 128° at Mammoth Tank, Cal., and 122° at Humboldt, Cal., in 1887; 119° at Fort Mojave, Ariz., in 1877, and at Fort Miller, Cal., in 1853. Among high temperatures for July at Signal Service stations, other than those given in the table of miscellaneous meteorological data, are 109° at Fort Gibson, Ind. T., in 1879; 111° at Fort Benton, Mont., in 1886; and 115° at Fort Bayard, N. Mex., in 1882.

The only regular station of the Signal Service reporting temperature below 32°, excepting Mount Washington, N. H., where 30° was registered, was Fort Klamath, Oregon, where the temperature fell to 24° on the 6th. At stations in central Montana, and at Cheyenne, Wyo., and Moorhead, Minn., the temperature fell below 40°. North of a line traced irregularly westward from Eastport, Me., to the upper Missouri valley, and thence irregularly south of west to San Francisco, Cal., the minimum temperature fell below 50°. The highest minimum temperatures were noted along the coasts of South Carolina, Georgia, Florida, the Gulf coast, and in the middle Gila valley, where they were above 70°. At the following-named stations the minimum temperature was as low or lower than previously recorded for July during the periods of observation: Port Huron, Mich., sixteen years record, 1° below the minimum of 1886; La Crosse, Wis., seventeen years record, the same as minimum of 1887; Des Moines, Iowa, eleven years record, 1° below minimum of 1882 and 1887; Dubuque, Iowa, seventeen years record, the same as minimum of 1882; Keokuk, Iowa, nineteen years record, 2° below minimum of 1873, 1880, and 1883; Fort Custer, Mont., ten years record, the same as minimum of 1883; Cheyenne, Wyo., seventeen years record, the same as minimum of 1882; North Platte, Nebr., fifteen years record, 3° below minimum of 1877 and 1882; Portland, Oregon, seventeen years record, the same as minimum of 1887. In Maryland, Virginia, the District of Columbia, and the Ohio Valley, the lowest temperature ever reported for July was generally noted in 1885; in eastern North Carolina in 1888; along the east Gulf coast in 1882; in Arizona in 1879; and on the north and middle Pacific coast in 1887. In all other districts the periods of occurrence were irregular. The reports of United States Army post surgeons and state weather service and voluntary observers show the following minimum temperature values of 32° or below, in July, 1889: Volunteer Springs, Ariz., 26°; Alma, Colo., 29°; Breckenridge, Colo., 25°; Dolly Varden Mines, Colo., 30°; Soda Springs, Idaho, 26°; Humboldt, Iowa, 32°; Fort Logan, Mont., 31°; Camp Sheridan and Fort D. A. Russell, Wyo., 32° and 30°, respectively.

RANGES OF TEMPERATURE.

The greatest and least daily ranges of temperature at regular stations of the Signal Service are given in the table of miscellaneous meteorological data. The greatest monthly ranges occurred within an area extending from south-central Nebraska to southern Dakota, where they exceeded 60°. The monthly ranges generally exceeded 50° in the Red River of the North and upper Missouri valleys, over the middle, eastern, and northeastern slopes of the Rocky Mountains, the northern and middle plateau regions, and from southwestern Arizona west of north over the San Joaquin and Sacramento valleys to central and eastern Oregon. The monthly ranges were least along the Gulf coast, where they were less than 20°, and were less than 30° along a greater part of the Pacific coast.

The following are some of the extreme monthly ranges:

Greatest.		Least.	
	°		°
Fort Klamath, Oregon	68.0	Corpus Christi, Tex	17.0
Valentine, Nebr	62.0	Key West, Fla	18.0
Huron, Dak	60.0	Eureka, Cal	21.0
Boise City, Idaho	58.0	Port Eads, La	21.0
Fresno, Cal	57.0	Point Reyes Light, Cal	22.0

FROST.

The only report of frost injurious to vegetation during July, 1889, was received from Mr. Jesse E. Glick, voluntary observer at Coulter, Colo., who states that thin ice formed, and frost caused injury to vegetables during the night of the 2–3d.

Frost was noted during the month, as follows: *Colorado:* Coulter, 2d, 3d, 17th, 18th, 24th, and 28th. *Illinois:* Charleston, 26th; Sycamore, 27th. *Montana:* Sheldon, 2d, 8th. *Oregon:* East Portland, 1st; Fort Klamath, 1st, 6th, 31st. *Utah:* Beaver, 3d. *Vermont:* Lunenburgh, 25th. *Kansas:* Tribune, 3d. *Michigan:* 24th, 25th in the northern sections.

TEMPERATURE OF WATER.

The following table shows the maximum, minimum, and mean water temperature as observed at the harbors of the several stations; the monthly range of water temperature; and the mean temperature of the air for July, 1889:

Stations.	Temperature at bottom.				Mean temperature of air at the station.
	Max.	Min.	Range.	Monthly mean.	
	°	°	°	°	°
Boston, Mass	66.4	61.2	5.2	64.4	69.4
Canby, Fort, Wash	66.0	59.8	6.2	63.0	58.3
Cedar Keys, Fla	89.9	80.3	9.6	85.5	81.4
Charleston, S. C	87.2	79.0	8.2	82.6	81.4
Eastport, Me	51.6	46.4	5.2	50.0	60.7
Galveston, Tex	88.5	84.0	4.5	87.1	83.8
Key West, Fla	90.2	85.0	5.2	87.0	83.2
Nantucket, Mass	75.0	71.5	3.5	73.3	67.0
New York City	72.7	66.0	6.7	69.2	73.5
Portland, Oregon	77.8	68.2	9.6	73.8	70.4

PRECIPITATION (expressed in inches and hundredths).

The distribution of precipitation over the United States and Canada for July, 1889, as determined from the reports of nearly 2,000 stations, is exhibited on chart iii. In the table of miscellaneous meteorological data the total precipitation and the departure from the normal are given for each Signal Service station. The figures opposite the names of the geographical districts in the columns for precipitation and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the precipitation is below the normal and subtracting when above.

In July, 1889, the precipitation was greatest in areas in the Atlantic coast states from Massachusetts to South Carolina, in southwestern Vermont, northeastern Georgia, along the Gulf coast of Florida north of Tampa Bay, in north-central Alabama and the adjoining part of Tennessee, extreme southern Louisiana, northeastern and south-central Texas, central Arkansas, south-central Indiana, and south-central Nebraska and adjoining parts of Kansas, where it exceeded 10 inches, and where, at stations in south-central Connecticut, eastern Pennsylvania, northern and western New Jersey, and northeastern Georgia, it was more than 15 inches, the greatest

rainfall, 20.45 inches, being reported from Diamond, Ga. At a majority of stations in the plateau regions between the Colorado and Columbia Rivers and over southern California little or no rain fell, while from the Pacific coast between San Francisco and Los Angeles, Cal., to northeastern Utah, north-central Nevada, and the San Joaquin and middle and lower Sacramento valleys, and from northwestern California to south-central Washington no precipitation was reported.

The precipitation for July, 1889, was generally above the normal in the Atlantic coast and Gulf states, the upper Mississippi valley, the upper lake region, the northeastern slope of the Rocky Mountains, the southern plateau region, and in areas in Arkansas, Kansas, Colorado, Nebraska, southern Dakota, and southwestern Oregon; elsewhere the precipitation was generally below the normal. The greatest excesses in precipitation occurred in areas from Massachusetts to Georgia, and in northeastern Illinois, where, at stations, they exceeded 5.00, the greatest excess noted, 12.33, being shown at New Haven, Conn. The greatest departure below the normal, 4.20, was reported at Hatteras, N. C. At Fort Supply, Ind. T., there was a deficiency of 3.17, while on the Gulf coast of New Brunswick, in central Tennessee, southeastern Michigan, and at La Crosse, Wis., and Moorhead, Minn., the rainfall was 2.00, or more, below the average for the month.

In districts where the precipitation was in excess the average percentages of the normal were about as follows: New England, 157 per cent.; middle Atlantic states, 186 per cent.; south Atlantic states, 115 per cent.; east Gulf states, 158 per cent.; west Gulf states, 156 per cent.; upper lake region, 121 per cent.; upper Mississippi valley, 114 per cent.; northeastern slope of the Rocky Mountains, 122 per cent.; and southern plateau region, 108 per cent. In districts where the precipitation was below the normal the percentages of the normal precipitation were about as follows: Florida peninsula, 86 per cent.; Rio Grande Valley, 31 per cent.; Ohio Valley and Tennessee, 94 per cent.; lower lake region, 69 per cent.; extreme northwest, 61 per cent.; Missouri Valley, 94 per cent.; middle eastern slope of the Rocky Mountains, 98 per cent.; southeastern slope of the Rocky Mountains, 73 per cent.; middle plateau region, 55 per cent.; northern plateau region, 89 per cent.; north Pacific coast, 6 per cent.; middle Pacific coast, 9 per cent.; and south Pacific coast, 5 per cent.

In the preceding month there was an excess of rainfall from New England and the lower lakes southward and southwestward to the Gulf of Mexico and thence northwestward to the middle eastern slope of the Rocky Mountains; in all other districts there was a deficiency of rainfall. For the current month the large excess of precipitation in the middle Atlantic states noted for the last three months has continued. Over the northeastern slope of the Rocky Mountains and in the southern plateau region, where in June but 50 per cent. and 60 per cent., respectively, of the normal amount of precipitation fell, there was an excess for July, while along the Pacific coast and over the middle and northern plateau regions the deficiency in rainfall continued through July. A notable feature of July, 1889, was the excessive precipitation which occurred in limited areas east of the Rocky Mountains, the excesses being most marked in western Connecticut, south-central Virginia, northeastern Illinois, central Arkansas, and north-central Kansas, and the irregular distribution of rainfall over the country. An explanation of the causes which operated to occasion the large departures above the normal in limited districts, while at neighboring stations deficiencies were noted, may be found in the discussion of areas of high and low pressure in this REVIEW.

DEVIATIONS FROM AVERAGE PRECIPITATION.

The following table shows for certain stations, as reported by voluntary observers, (1) the average precipitation for a series of years; (2) the length of record during which the observations have been taken and from which the average has been computed; (3) the total precipitation for July, 1889; (4) the departure of the current month from the average; (5) and the extreme monthly precipitation for July during the period of observation and the years of occurrence:

State and station.	County.	(1) Average for the month of July.	(2) Length of record.	(3) Total for July, 1889.	(4) Departure from average.	(5) Extreme monthly precipitation for July.			
						Greatest.		Least.	
						Am't.	Year.	Am't.	Year.
Arkansas.		*Inches*	*Years*	*Inches*	*Inches.*	*Inches*		*Inches.*	
Lead Hill	Boone	6.03	7	2.80	−3.23	11.60	1883	1.15	1888
California.									
Sacramento	Sacramento	0.02	39	0.00	−0.02	0.55	1860	0.00	*
Colorado.									
Fort Lyon	Bent	2.24	18	2.62	+0.38	6.30	1872	0.14	1874
Connecticut.									
Middletown	Middlesex	4.19	27	13.43	+9.24	13.43	1889	1.54	1870
Florida.									
Merritt's Island	Brevard	5.84	11	8.09	+2.25	11.72	1884	0.86	1883
Georgia.									
Forsyth	Monroe	4.26	15	8.21	+3.95	12.70	1887	0.32	1878
Illinois.									
Peoria	Peoria	3.96	33	7.64	+3.68	8.87	1860	0.47	1886
Riley	McHenry	3.86	38	3.44	−0.42	9.99	1862	0.81	1886
Indiana.									
Logansport	Cass	2.94	14	7.52	+4.58	7.52	1889	0.62	1856
Vevay	Switzerland	3.95	24	6.93	+2.98	9.80	1874	0.90	1869
Iowa.									
Cresco	Howard	4.61	16	2.86	−1.75	12.70	1883	1.60	1875
Monticello	Jones	4.40	34	4.23	−0.17	10.93	1883	0.60	1874
Logan	Harrison	5.45	23	6.28	+0.83	13.00	1878	2.20	1886
Kansas.									
Lawrence	Douglas	4.37	24	6.34	+1.97	7.85	1861	0.11	1886
Wellington	Sumner	4.00	10	7.99	+3.99	7.99	1889	1.89	1864
Louisiana.									
Grand Coteau	St. Landry	4.44	6	4.28	−0.16	8.08	1886	1.89	1888
Maine.									
Gardiner	Kennebec	3.29	49	2.96	−0.33	6.96	1887	0.59	1864
Maryland.									
Cumberland	Allegany	3.70	17	2.74	−0.96	5.59	1887	1.01	1885
Massachusetts.									
Amherst	Hampshire	4.49	53	9.49	+5.00	11.58	1874	0.96	1864
Newburyport	Essex	3.71	11	6.79	+3.08	6.90	1883	1.43	1882
Somerset	Bristol	3.73	17	6.38	+2.65	7.52	1880	2.04	1886
Michigan.									
Kalamazoo	Kalamazoo	3.55	13	4.82	+1.27	6.50	1877	0.79	1887
Thornville	Lapeer	3.27	12	1.90	−1.37	6.69	1883	0.47	1881
Minnesota.									
Minneapolis	Hennepin	3.08	23	3.16	+0.08	6.26	1879	0.43	1877
Montana.									
Fort Shaw	Lewis&Clarke	1.07	19	0.56	−0.51	2.66	1884	0.00	'71,'74
New Hampshire.									
Hanover	Grafton	3.42	43	5.48	+2.06	8.48	1877	1.24	1854
New Jersey.									
Moorestown	Burlington	4.18	26	7.94	+3.76	7.94	1889	1.40	1882
South Orange	Essex	4.59	18	18.58	+13.99	18.58	1889	1.03	1881
New York.									
Cooperstown	Otsego	4.14	35	5.61	+1.47	7.92	1863	0.89	1868
Palermo	Oswego	3.26	35	3.61	+0.35	6.60	1874	0.64	1882
North Carolina.									
Lenoir	Caldwell	4.49	16	9.00	+4.51	9.10	1886	1.70	1884
Ohio.									
N. Lewisburgh	Champaign	5.06	17	3.25	−1.81	8.60	1876	1.60	1874
Wauseon	Fulton	3.80	17	4.82	+1.02	7.26	1872	0.31	1886
Oregon.									
Albany	Linn	0.60	12	0.00	−0.60	1.87	1884	0.00	*
Eola	Polk	0.51	17	0.00	−0.51	2.29	1884	0.00	*
Pennsylvania.									
Dyberry	Wayne	4.73	18	6.53	+1.80	9.28	1887	0.00	1868
Grampian Hills	Clearfield	4.99	18	7.33	+2.34	7.33	1889	3.35	1868
Wellsborough	Tioga	7.20	10	3.06	−4.14	12.30	1880	3.06	1889
South Carolina.									
Statesburgh	Sumter	3.64	8	6.27	+2.63	6.27	1889	1.70	1884
Tennessee.									
Austin	Wilson	4.11	21	5.76	+1.65	10.13	1880	0.20	1881
Milan	Gibson	4.04	6	4.00	−0.04	8.51	1884	1.49	1888
Texas.									
New Ulm	Austin	4.09	17	2.13	−1.96	14.38	1873	0.00	1884
Vermont.									
Strafford	Orange	4.51	16	6.50	+1.99	6.77	1873	2.00	1881
Virginia.									
Bird's Nest	Northampton	4.06	20	8.40	+4.34	8.90	1877	1.25	1873
Wytheville	Wythe	4.02	24	6.69	+2.67	8.10	1861	0.89	1883
Wisconsin.									
Madison	Dane	4.56	20	2.12	−2.44	9.47	1881	0.79	1886
Washington.									
Fort Townsend	Jefferson	0.90	14	0.01	−0.89	4.41	1888	0.01	1889

*Frequently.

Table of excessive precipitation, July, 1889.

State and station.	Monthly rainfall 10 inches or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Alabama.	*Inches.*	*Inches.*		*Inches*	*h. m.*	
Citronelle		2.60	26			
Decatur (1)	12.63	2.98	26			
Decatur (2)	10.63					
Montgomery		2.83	3-4	2.35	0 57	3

Table of excessive precipitation—Continued.

State and station.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Alabama—Continued.	*Inches.*	*Inches.*		*Inches*	*h. m.*	
Montgomery				1.10	0 55	30
New Market				1.08	0 15	12
Selma		3.00	7			
Wiggins		3.00	26	3.00	2 00	26
Arizona.						
Banghart's Station		3.00	3			
Flagstaff		2.68	14	1.02	0 25	25
Fort Verde				1.70	1 10	19
Tucson		3.00	18-19			
Arkansas.						
Hot Springs				1.85	1 00	7
Little Rock		3.64	29	1.08	0 45	10
Pine Bluff		3.05	29			
Russellville	12.00	6.00	29			
Colorado.						
Rocky Ford		2.89	8	2.89	1 30	8
Connecticut.						
Birmingham	14.19					
Clark's Falls	10.58					
Hartford (2)	10.97					
Lake Konomoc	10.31					
Lebanon	11.37					
Mansfield	11.39					
Middletown	13.43					
New Britain	11.03					
New Hartford (1)	10.58					
New Hartford (2)	11.70					
New Haven	17.08	2.76	30	1.07	0 25	4
Do	17.08	3.81	30-31	1.34	0 25	23
North Woodstock	11.34					
Pomfret	11.53					
Shelton	15.55	3.80	30			
South Manchester	11.09					
Uncasville	11.16					
Wallingford	13.58	3.48	30			
Waterbury	10.83					
Dakota.						
Armour				2.15	1 05	11
Beulah		2.56	11	2.56	1 20	11
De Smet				2.20	2 00	7
Fort Meade				1.40	0 35	11
Spearfish				1.10	0 45	24
Spring Lake		3.00	7-8			
Steele				1.25	0 33	16
Webster		2.89	11			
Wolsey				1.59	1 00	25
District of Columbia.						
Washington Barracks		2.60	30-31			
Washington City		3.18	30-31			
Florida.						
Altamonte Springs	10.94					
Cedar Keys	10.03	2.99	2			
Fort Barrancas	12.35					
Jacksonville				1.09	1 00	18
Manatee	10.01	2.56	25			
Do		2.59	31			
Pensacola	10.78	2.98	10			
Georgia.						
Atlanta				1.13	1 00	2-3
Do				1.00	0 30	13
Do				2.22	1 10	20
Do				1.37	1 00	26
Augusta	10.10	3.93	25-26			
Columbus		2.99	30			
Diamond	20.45	4.10	3			
Do		3.20	27			
Do		2.60	28			
Duck	10.51					
Forsyth		3.25	2			
Hephzibah		4.90	25	4.90	4 00	25
Macon		3.40	27			
Milledgeville				2.47	2 00	3
Do				1.03	1 00	4
Do				2.30	2 00	26
Savannah		2.58	17			
Toccoa		3.70	4			
Waynesborough		2.60	28			
Illinois.						
Chicago		4.02	27	1.55	0 35	18-19
Do				4.02	3 34	27
Mattoon		2.50	14			
Peoria				2.15	1 00	19
Rock Island Arsenal		5.16	13	5.16	1 30	13
Windsor				1.54	0 45	18-19
Indiana.						
Angola		4.50	18			
Blue Lick		3.08	11			
Marengo	10.50	4.20	2			
Point Isabel				2.37	1 45	14
Rockville		3.00	18			
Salem		2.64	11			
Scalesville		2.58	12			
Vevay				1.54	1 30	11
Iowa.						
Ames				1.00	0 45	8
Bancroft		2.50	8			
Davenport		5.18	13-14			
Dubuque				2.00	0 50	2
Dysart				2.40	1 30	16
Glenwood (2)		3.29	15			

Table of excessive precipitation—Continued.

State and station.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Iowa—Continued.	*Inches.*	*Inches.*		*Inches*	*h. m.*	
Keokuk		3.64	2	2.34	1 45	2
Do				1.10	0 35	2
Le Claire		5.00	14			
Muscatine (1)		4.10	13			
Muscatine (2)		2.50	11-12			
Sac City		5.00	13	5.00	5 00	13
Storm Lake		3.10	13			
West Bend		3.10	8			
Kansas.						
Belleville		4.10	23			
Bendena		3.94	10			
Burr Oak	11.75	3.00	13			
Do		4.00	23			
Cawker City		2.60	23			
Concordia		5.14	22-23			
Cunningham				1.23	0 55	26
Elk Falls				1.33	1 00	23
Englewood		3.70	9-10	1.71	1 00	19
Fremont				1.08	0 35	21
Globe		2.76	15-16			
Havensville		3.50	15-16			
Hill City		2.50	20			
Do		3.00	21			
Hoxie		3.00	20			
Hymer		2.88	23-24			
Independence		3.98	23-24	2.00	0 45	23
Kirwin	11.30	2.80	6			
Do		4.30	23			
Lebo				2.01	1 10	9
Manhattan (1)		5.38	23			
Manhattan (2)		4.40	23			
Manhattan (3)	10.28	2.80	22			
Macksville		2.75	8			
Minneapolis		3.75	23			
Offerle				1.00	0 30	8
Rome				2.00	1 00	8
Sedan		3.06	22-23			
Shocky		2.50	18			
Stockton		4.50	23			
Topeka		2.66	22-23	1.52	1 20	23
Toronto		3.07	23	1.22	1 00	23
Wakefield		3.14	22-23			
Wellington		2.94	8			
Yates Center		3.07	23			
Kentucky.						
Bowling Green		2.75	28			
Earlington				2.30	1 30	11
Franklin				1.60	1 30	3
Lexington				2.00	1 16	14
Owenton				1.04	1 00	20
Shelbyville		2.53	14			
Louisiana.						
Cameron		2.86	10			
Houma	10.49	3.49	2	3.49	1 15	2
Do		2.66	7	2.66	0 47	7
Melville		3.25	30			
Monroe		3.87	22			
New Orleans				1.40	0 15	6
Do				1.04	1 00	9
Do				1.20	1 00	12
Do				1.15	0 30	13
Winnfield	10.38	2.67	26	1.98	0 50	6
Maryland.						
Baltimore	11.03	3.63	1-2	1.01	0 45	30
Do		4.02	30-31			
Barren Creek Springs	12.48	3.52	26-27			
Fallston	12.37					
Fort McHenry	10.18	3.50	30-31			
Frederick		3.77	30			
Gambrill's	13.02	4.18	30-31			
Jewell	10.25	3.50	1-2			
McDonogh		2.53	1			
Massachusetts.						
Blue Hill (summit)		2.60	27			
Mansfield	10.60					
Newburyport		2.65	20			
Royalston		2.62	19-20			
Do		2.78	29-30			
Taunton (1)				1.27	1 15	23
Michigan.						
Bronson		3.02	18			
Colon		4.59	18			
Marquette				1.22	0 32	21
Noble		3.12	18			
Sturgis		4.90	18			
Traverse City (2)		3.35	3			
Minnesota.						
Duluth				1.10	0 50	7
Redwood Falls		2.78	17			
Mississippi.						
Macon		5.00?	23			
Missouri.						
Princeton		2.60	13-14			
Springfield				2.00	1 20	15
Do				1.30	1 00	23
Nebraska.						
Ansley		2.60	9			
Culbertson (2)				1.46	0 25	19
Holmesville		3.00	13			
Marquette	11.18					

Toble of excessive precipitation—Continued.

State and station.	Monthly rainfall to inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Nebraska—Continued.	*Inches.*	*Inches.*		*Inches*	*h. m.*	
Minden	13.20					
North Loup	10.37	2.80	11			
North Platte		2.70	7-8	1.75	1 05	7
Omaha				1.77	1 30	8
Plattsmouth		2.50	16			
Superior	10.25	3.20	20			
Valentine				1.10	1 00	13
New Hampshire.						
Mount Washington	13.18	3.86	19-20			
North Conway		2.66	20			
New Jersey.						
Freehold		3.05	30-31			
Gillette	12.31	4.06	30			
Hanover	11.83	3.81	30-31			
Highland Park	10.59	3.33	30-31			
Lambertville	10.38	4.47	30-31			
Locktown	13.06	3.64	19-20			
Madison	12.47	4.03	30-31			
Newark	14.60	5.31	30-31			
New Brunswick (1)	10.45	3.01	30-31			
New Brunswick (2)	10.35	3.71	30-31			
Oceanic		2.70	27			
Plainfield	15.52	6.61	30-31			
South Orange	18.58	3.23	19-20	5.40	3 00	30
Do		8.57	30-31	1.50	1 00	31
Tenafly	15.53	5.15	30-31			
Union	14.65	5.95	30-31			
Valley	11.21	3.18	30-31			
Trenton		3.28	30			
New Mexico.						
Springer				2.00	1 30	13
New York.						
Auburn		2.61	19			
Canton				1.22	0 25	1
David's Island	13.12	3.68	19-20			
Do		5.22	30-31			
Fort Columbus		2.57	26-27			
Fort Schuyler	10.09					
Kingston		3.10	31	1.66	1 00	9
New York City		2.77	26-27	1.05	1 00	27
Tannersville	10.20	3.78	19			
West Point		2.80	31			
White Plains	14.07	2.80	30-31			
North Carolina.						
Charlotte		3.30	26-27			
Grover				2.00	2 00	26
Lumberton		4.50	5			
Mount Holly		3.25	27			
Mount Pleasant		3.21	25			
Soapstone Mount	10.00	2.50	29			
Wadesborough		3.95	1			
Weldon (2)	11.91	2.70	8			
Wilmington	11.10	3.32	1	2.60	1 00	1
Ohio.						
Athens		3.55	18			
Canton		3.50	18			
College Hill		3.00	19			
Logan	10.83	5.50	18			
Waverly		2.56	19			
Pennsylvania.						
Blooming Grove	11.00	2.70	29			
Coatsville	12.93					
Doylestown	11.87					
Easton	10.48					
Forks of Neshaminy	10.36					
Franklin		4.43	31			
Frederick	12.69					
Germantown	10.50					
Lansdale	15.02					
Le Roy				1.50	0 45	13
Nisbet				2.30	1 00	13
Ottsville	13.19					
Point Pleasant	12.30					
Pottstown	12.50					
Quakerstown	11.54					
Scisholtzville	11.76					
Smith's Corners	12.30					
West Chester	12.57					
York				1.75	0 45	13
Rhode Island.						
Pawtucket	10.68					
Woonsocket	11.41					
South Carolina.						
Cedar Springs		3.25	26	3.25	1 15	26
Charleston		4.14	27			
Cheraw	10.89	3.00	1			
Columbia		3.38	30			
Conway	10.31					
Hardeeville		2.60	6			
Jacksonborough		2.79	30			
Kirkwood		2.75	26			
Saint Matthews		2.54	25			
Yorkville		3.69	27			
Tennessee.						
Ashwood		4.37	13			
Columbia	11.73					
Memphis				1.06	0 58	28
Riddleton				1.29	1 10	11
Texas.						
Camp Peña Colorado		3.20	10-11			

Table of excessive precipitation—Continued.

State and station.	Monthly rainfall to inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Texas—Continued.	*Inches.*	*Inches.*		*Inches*	*h. m.*	
Cedar Hill		2.50	1			
Cleburne	11.50	3.00	1-2			
Do		6.00	3-4			
Dallas	11.89	4.95	3			
Decatur		3.14	25			
Fort Clark	10.75	4.00	4			
Do		5.00	10			
Fort McIntosh		2.64	11			
Menardville		3.30	10			
San Antonio				1.50	0 43	1
Waco		3.20	11			
Weatherford		2.50	3			
Utah.						
Losee		2.60	15			
Vermont.						
Jacksonville		2.68	20			
Strafford		2.50	19-20			
Vernon	11.02					
Virginia.						
Bird's Nest		2.90	4			
Fort Monroe	11.61	2.80	4-5			
Fort Myer		3.10	31			
Lexington		2.55	30-31			
Lynchburgh	10.94	3.21	30-31	1.62	0 55	11
Mossingford	11.74					
Norfolk	10.69					
University of Virginia	12.05	3.95	31			
West Virginia.						
Parkersburgh		3.00	18-19			
Wyoming.						
Lusk				1.03	0 45	12
Mexico.						
Mazatlan				1.82	1 05	20
Do				1.30	1 20	29

Excessive precipitation received too late for publication in June.

Colony of Surinam.						
Burnside Coronie	12.50			3.02		25

Precipitation to equal or exceed ten inches was reported at eighteen stations in Connecticut; fifteen stations in Pennsylvania; fourteen stations in New Jersey; and six stations in Maryland; in New Hampshire, Vermont, Massachusetts, Rhode Island, New York, Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Louisiana, Texas, Arkansas, Tennessee, Ohio, Indiana, Kansas, and Nebraska, at from one to five, inclusive. In states and territories other than those named precipitation to equal or exceed ten inches was not reported for July, 1889. The heaviest rainfalls, by states, for the month were: 13.18 at Mount Washington, N. H.; 11.02 at Vernon, Vt.; 10.60 at Mansfield, Mass.; 17.08 at New Haven, Conn.; 11.41 at Woonsocket, R. I.; 14.07 at White Plains, N. Y.; 18.58 at South Orange, N. J.; 15.02 at Lansdale, Pa.; 13.02 at Gambrills, Md.; 12.05 at University of Va.; 11.91 at Weldon, N. C.; 10.89 at Cheraw, S. C.; 20.45 at Diamond, Ga.; 12.35 at Fort Barrancas, Fla.; 12.63 at Decatur, Ala.; 10.49 at Houma, La.; 11.89 at Dallas, Tex.; 12.00 at Russellville, Ark.; 11.73 at Columbia, Tenn.; 10.83 at Logan, Ohio; 10.50 at Marengo, Ind.; 11.75 at Burr Oak, Kans.; 13.20 at Minden, Nebr. In July of preceding years rainfall to equal or exceed ten inches has occurred most frequently in Florida, where it was reported for thirty-one years; in Georgia for nineteen years; in South Carolina for seventeen years; in New York for fifteen years; in Kansas for thirteen years; in Iowa, Missouri, North Carolina, and New Hampshire for twelve years; in Louisiana for eleven years; in Alabama, Arkansas, Illinois, Indiana, Massachusetts, Michigan, Minnesota, Mississippi, Nebraska, New Jersey, Ohio, Pennsylvania, Texas, Virginia, and Wisconsin for from five to ten years, inclusive; in Arizona, Colorado, Connecticut, Dakota, Delaware, District of Columbia, Indian Territory, Kentucky, Maryland, New Mexico, Tennessee, and West Virginia for from one to five years, inclusive. In states and territories other than those named precipitation to equal or exceed ten inches has not been reported for July in preceding years. Among notable monthly rainfalls for July

are: 20.18 at Opelika, Ala., and 21.09 at Auburn, Ala., in 1887; 25.88 at Fernandina, Fla., in 1864; 22.24, 21.31, and 24.52 at Fort Brooke, Fla., in 1856, 1848, and 1840, respectively; 20.50 at Kentland, Ind., in 1869; 21.86 at Lake Hook, Minn., in 1872; 23.90 at Mount Washington, N. H., in 1884; 21.12 at Wilmington, N. C., in 1886; 28.11 at White, Tenn., in 1883. Exclusive of the instances cited, monthly precipitation to equal or exceed fifteen inches has been reported for seven years in Florida; for five years in Massachusetts; for three years in Kansas and Texas; for two years in Alabama, Arkansas, Georgia, Illinois, Iowa, Mississippi, Nebraska, New Hampshire, New Jersey, New York, North Carolina, and Virginia; and for one year in Indian Territory, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Missouri, Pennsylvania, and Wisconsin.

Precipitation to equal or exceed 2.50 inches in twenty-four hours was reported from the greatest number of stations, twenty-nine, in Kansas; at eighteen in New Jersey; at twelve in Texas; at eleven in Georgia; at from five to ten, inclusive, in New York, Maryland, Virginia, North Carolina, South Carolina, Alabama, Louisiana, Ohio, Indiana, Michigan, Iowa, and Nebraska; and in from one to four, inclusive, in New Hampshire, Vermont, Massachusetts, Connecticut, Pennsylvania, District of Columbia, West Virginia, Florida, Mississippi, Arkansas, Tennessee, Kentucky, Illinois, Missouri, Minnesota, Dakota, Colorado, Utah, and Arizona. In states and territories other than those named rainfall to equal or exceed 2.50 inches in twenty-four hours has not been reported. The heaviest rainfalls for one day, by states, for the month were: 3.00, at Selma and Wiggins, Ala., on the 7th and 26th, respectively; 3.00, at Bangharts, Ariz., 3d; 6.00, at Russellville, Ark., 29th; 2.89, at Rocky Ford, Colo., 8th; 3.80, at Shelton, Conn., 30th; 2.89, at Webster, Dak., 11th; 2.98, at Pensacola, Fla., 10th; 4.90, at Hepzibah, Ga., 25th; 5.16, at Rock Island Arsenal, Ill., 13th; 4.50, at Angola, Ind., 18th; 5.00, at Le Claire and Sac City, Iowa, 14th and 13th, respectively; 5.38, at Manhattan, Kans., 23d; 2.75, at Bowling Green, Ky., 28th; 3.87, at Monroe, La., 22d; 3.77, at Frederick, Md., 30th; 2.65, at Newburyport, Mass., 20th; 4.90, at Sturgis, Mich., 18th; 2.78, at Redwood Falls, Minn., 17th; 5.00?, at Macon, Miss., 23d; 3.20, at Superior, Nebr., 20th; 2.66, at North Conway, N. H., 20th; 4.06, at Gillette, N. J., 30th; 3.10, at Kingston, N. Y., 31st; 4.50, at Lumberton, N. C., 5th; 5.50, at Logan, Ohio, 18th; 4.43, at Franklin, Pa., 31st; 4.14, at Charleston, S. C., 27th; 4.37, at Ashwood, Tenn., 13th; 5.00, at Fort Clark, Tex., 10th; 2.60, at Losee, Utah, 15th; 2.68, at Jacksonville, Vt., 20th; 3.95, at the University of Virginia, 31st. At Washington, D. C., 3.18 fell on the 30th and 31st; at Davenport, Iowa, 5.18 on the 13th and 14th; at Concordia, Kans., 5.14 on the 22d and 23d; at South Orange, N. J., 8.57 on the 30th and 31st; at David's Island, N. Y., 5.22 on the 30th and 31st; and at Cleburne, Tex., 6.00 on the 3d and 4th.

Precipitation to equal or exceed 2.50 inches in twenty-four hours in July has been reported most frequently in Kansas, where it has been noted for nineteen years; in Iowa for fifteen years; in Nebraska for fourteen years; in Indiana, North Carolina, and South Carolina for thirteen years; in Georgia, Pennsylvania, and Texas for twelve years; in Dakota, Florida, and Ohio for eleven years; in Alabama, Connecticut, Indian Territory, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Jersey, New York, Tennessee, and Wisconsin for from five to ten years, inclusive; and in Arizona, Arkansas, Colorado, Delaware, District of Columbia, Kentucky, Maine, Montana, New Hampshire, New Mexico, Oregon, Rhode Island, Virginia, and West Virginia, for from one to four years, inclusive. In states and territories other than those named rainfall to equal or exceed 2.50 inches in twenty-four hours has not been reported for July in preceding years. Among the heavier daily rainfalls reported for July in preceding years are: 7.50, Thomson, Ga., 28th, 1887; 7.50, Smithville, Ga., 12th, 1884; 10.00, Union Point, Ga., 29th, 1887; 8.00, Logan, Iowa, 10th, 1878; 7.75, Nashua, Iowa, 9th, 1881; 7.50, Fort Ripley, Minn., 18th, 1867; 7.21, Carthage, Mo., 24th, 1886; 7.61, Independence, Mo., 14th, 1885; 8.00, Pierce City, Mo., 1886; 12.00, Lambertville, N. J., 16th, 1865; 7.33, Wilmington, N. C., 15th, 1886; 7.00, Grace, Ohio, 9th, 1888; 7.00, Hulmeville, Pa., 26th, 1879. Exclusive of the instances and years cited, rainfall to equal or exceed 5.00 inches in twenty-four hours has been reported in Alabama in 1873 and 1887; in Arizona in 1878; in Dakota in 1871; in Georgia in 1886; in Illinois and Indiana in 1878; in Iowa in 1876; in Missouri in 1883; in New Jersey in 1887; in New York in 1874; in North Carolina in 1879 and 1884; in Ohio in 1879; in South Carolina in 1878; in Tennessee in 1883; in Texas in 1878, 1881, 1882, and 1888, and in Wisconsin in 1879.

Rainfall to equal or exceed the rate of one inch an hour occurred on eight dates in Georgia; six dates in Kansas and Louisiana; five dates in Dakota; four dates in Nebraska, Illinois, Kentucky, and Alabama; three dates in New York and Iowa; two dates in Arizona, Arkansas, Tennessee, North Carolina, Missouri, Indiana, Connecticut, and New Jersey, and on one date in Massachusetts, Pennsylvania, Maryland, Virginia, South Carolina, Florida, Michigan, Texas, Minnesota, Wyoming, Colorado, and New Mexico. In states and territories, other than those named, rainfall to equal or exceed the rate of one inch an hour has not been reported for July, 1889. Among the heavier rainfalls reported for one hour or less are: 0.67 in ten minutes at Dubuque, Iowa, 2d; 1.08 in fifteen minutes at New Market, Ala., 12th; 1.40 in fifteen minutes at New Orleans, La., 6th; 1.34 in twenty-five minutes at New Haven, Conn., 23d; 1.46 in twenty-five minutes at Culbertson, Nebr., 19th; 1.22 in twenty-five minutes at Canton, N. Y., 1st; 5.16 in one hour and thirty minutes at Rock Island Arsenal, Ill., 13th; 2.00 in forty-five minutes at Independence, Kans., 23d; 2.66 in forty-seven minutes at Houma, La., 7th. In July of preceding years rainfalls to equal or exceed this amount in the period given have been most frequently reported in Kansas, where they have been noted for sixteen years; in Pennsylvania for fifteen years; in Iowa for fourteen years; in Illinois and North Carolina for twelve years; in Indiana, Nebraska, and Texas for eleven years; in Alabama, Florida, and Michigan for ten years; in Arizona, Arkansas, Dakota, Georgia, Louisiana, Massachusetts, Minnesota, Missouri, New York, Ohio, South Carolina, Tennessee, and Virginia for from five to nine years, inclusive, and in California, Colorado, Connecticut, District of Columbia, Indian Territory, Kentucky, Maine, Maryland, Mississippi, Montana, New Hampshire, New Mexico, West Virginia, Wisconsin, and Wyoming for from one to four years, inclusive. In the middle and northern plateau regions and along the middle and north Pacific coasts no rainfalls to equal or exceed the rate of one inch an hour have been reported in July in preceding years. Among the heavier rainfalls reported for one hour or less in July are, for ten minutes: 1.30, at Huron, Dak., 26th, 1885; 1.22, at Albany, N. Y., 10th, 1876; 0.50, at New York City, 27th, 1880: for fifteen minutes, 1.20, at Philo, Ill., 8th, 1888; 1.56, at Amana, Iowa, 31st, 1878; 1.00, at Saint Louis, Mo., 5th, 1848; 2.25, at Sandusky, Ohio, 11th, 1879; 1.00, at New York City, 13th, 1880: for twenty minutes, 1.90, at West Leavenworth, Kans., 21st, 1889; 2.00, at Amherst, Mass., 16th, 1879; 1.20, at Dunbarton, N. H., 27th, 1887: for twenty-five minutes, 1.60, at Jacksonville, Fla., 16th, 1888; 2.40, at Indianapolis, Ind., 12th, 1876; 1.78, at Wellsborough, Pa., 16th, 1880: for thirty minutes, 3.50, at Logansport, Ind., 7th, 1879: for forty minutes, 3.49, at Jacksonville, Fla., 6th, 1886: for forty-eight minutes, 2.90, at Nashville, Tenn., 8th, 1878.

MAXIMUM RAINFALLS IN ONE HOUR OR LESS.

The table shows that the greatest rate per minute for a five minute period was .09 of an inch at Chicago, Ill., on the 18th. The rate per minute for this period at the other stations given was, .06 at Savannah, Ga., 6th, and Washington, D. C., 1st and 15th; .05 at Detroit, Mich., 3d; Dodge City, Kans., 14th; .04 at Cincinnati, Ohio, 19th; New York, N. Y., 4th; and Saint Louis, Mo., 14th; .03 at Boston, Mass., 31st;

Jupiter, Fla., 22d. At Chicago, Ill., the rainfall of the 18th averaged .08 of an inch for ten minutes; at Savannah, Ga., .045 was averaged for ten minutes on the 17th, while at Washington, D. C., this rate of fall was recorded on the 1st. At the other stations named the greatest average rate of precipitation for ten minutes varied from .02 to .04 of an inch. The heaviest rainfall registered for one hour, 1.70, fell at Cincinnati, Ohio, on the 19th; 1.60 fell in one hour at Chicago, Ill., on the 18–19th, and 1.05 at New York, N. Y., on the 27th. At the other stations named the rainfall did not equal or exceed one inch an hour.

Station.	Maximum fall in—					
	5 min.	Date.	10 min.	Date.	1 hour.	Date.
	Inch.		Inch.		Inch.	
Boston, Mass	0.15	31	0.22	31	0.53	31
Cincinnati, Ohio	0.22	19	0.40	19	1.70	19
Chicago, Ill	0.45	18	0.80	18	1.60	18–19
Detroit, Mich	0.25	3	0.30	3	0.40	3
Dodge City, Kans	0.25	14	0.35	14	0.52	14–18
Jupiter, Fla	0.13	22	0.20	19	0.50	23
New York City	0.20	4	0.30	27	1.05	27
Savannah, Ga	0.30	6	0.45	17	0.80	17
San Francisco, Cal					T.*	
Saint Louis, Mo	0.20	14	0.25	14	0.30	14
Washington, D. C	0.30	1, 15	0.45	1	0.90	30

*Total for month.

The above table is a record of the heaviest rainfalls during July, 1889, for periods of five and ten minutes, and one hour, as reported by regular stations of the Signal Service furnished with self-registering gauges.

HAIL.

Descriptions of the more severe hail-storms of the month are given under "Local storms." Hail was reported during the month as follows: 1st, Ariz., Mont. 2d, Ohio. 4th, Ariz. 6th, Mont., Nev. 7th, Dak., Nebr., Tex. 8th, Colo., Kans. 9th, Nebr., N. Y., Oregon. 10th, Colo., Mo., N. Y. 11th, Dak., Va. 12th, Ill., Iowa. 13th, Ariz., Dak., Ind. T., Nebr., Utah. 14th, Ind., Ind. T., Iowa, N. H., Va. 15th, Colo., Ind. T., N. J. 16th, Ariz. 17th, Ariz., Dak., Mass., Minn., N. H., Wash. 18th, Ariz., Kans. 19th, Ariz., Dak., Kans., Nebr., Wyo. 21st, Kans. 22d, Ariz., Kans., Mo. 23d, Ky., Mass., N. H., N. Y., Ohio, Vt. 24th, Dak., Kans., Mont., Nebr., Tenn., Wyo. 25th, Iowa, Minn. 26th, Ill., Ind., Kans., Minn., Wis. 27th, Ala., Ill., Iowa, Mich., Minn., Wis. 28th, Iowa, Ohio, Tenn. 29th, Ariz., Ill., Iowa, Mo. 30th, Ariz., Mich., N. Y. 31st, Ariz.

SNOW.

Turin, Lewis Co., N. Y.: reports state that snow flakes fell in this vicinity on the afternoon of the 15th.—*Turin, N. Y., Leader, 16th.*

WINDS.

The prevailing winds during July, 1889, are shown on chart ii by arrows flying with the wind. In New England, the middle Atlantic states, west Gulf states, upper lake region, Missouri Valley, middle, eastern, and southeastern slope of the Rocky Mountains the winds were mostly southerly; in the south Atlantic and east Gulf states, southwest; over eastern Florida, southeast to southwest; over the lower lakes and the southern plateau region, south to west; in the upper Mississippi valley, south to east; on the northeastern slope of the Rocky Mountains, northwest o southwest; over the middle plateau region and along the south Pacific coast, westerly; on the north Pacific coast, north to west; on the middle Pacific coast, south to west and variable; in the Ohio valley and Tennessee, the extreme Northwest, and the northern plateau region, variable.

HIGH WINDS (in miles per hour).

Maximum velocities of fifty miles, or more, per hour, other than those given in the table of miscellaneous meteorological data, were not reported.

LOCAL STORMS.

Severe storms were most frequently reported in Ohio, where they were noted for five dates; in Iowa and Massachusetts for four dates; in Dakota, Delaware, Mississippi, Pennsylvania, and Texas for three dates; in Colorado, Connecticut, Georgia, Illinois, Kansas, Louisiana, Maryland, Michigan, Minnesota, Nebraska, New York, Virginia, West Virginia, and Wisconsin for two dates; in Arkansas, Indiana, Kentucky, Maine, Missouri, New Hampshire, New Jersey, North Carolina, Oregon, and Tennessee for one date. In states and territories other than those named no severe storms have been reported. They were reported in the greatest number of states, seven, on the 30th, when they occurred in New Hampshire, Massachusetts, Connecticut, Delaware, New Jersey, Maryland, and Mississippi; in New York, West Virginia, Kentucky, Michigan, and Ohio on the 19th; in Massachusetts, Dakota, Iowa, and Minnesota on the 17th; in Michigan, Mississippi, Wisconsin, and Illinois on the 27th; in Massachusetts, Arkansas, New York, and Missouri on the 29th; in Maryland, Connecticut, Delaware, and Virginia on the 31st; in Indiana, Ohio, and Virginia on the 14th; in Iowa, West Virginia, and Ohio on the 18th; in Georgia, North Carolina, and Minnesota on the 25th; in North Carolina and Ohio on the 1st; in Pennsylvania and Iowa on the 2d; in Texas and Pennsylvania on the 10th; in Delaware and Dakota on the 11th; in Colorado and Pennsylvania on the 15th; in Colorado and Kansas on the 22d; and in but one state or territory on the 2d, 3d, 5th to 7th, 9th, 20th, 21st, 23d, 24th, 28th. The following are descriptions of the storms referred to:

1st. *North Carolina.*—Wilmington: a severe thunder-storm, passing from southwest to northeast, accompanied by vivid and incessant lightning, began 11.45 a. m. and ended 1.50 p. m. The drainage being insufficient to carry off the water, several houses on Market and Front streets were flooded. *Ohio.*—Newark, Licking Co.: the heavy wind and rain storm this evening caused a washout in the Pan Handle track, eight miles east of this city, throwing eleven cars off the track.—*New York Daily Tribune, July 2.*

2d. *Pennsylvania.*—Tidioute, Warren Co.: a cloud-burst occurred one mile from this place at 6 p. m. and flooded the streets in this town to a depth of one foot. Maguire Run was swollen to mammoth proportions, and caused much destruction to public and private property.—*Times, Pittsburgh, Pa., July 4.* Titusville, Crawford Co.: a terrific thunder-storm occurred at 6 p. m. It was followed by two cloud-bursts, which caused a furious overflow in Church Run which winds through the city, flooding it in some places to the first stories of the houses. Estimated damage, $15,000. Altoona, Blair Co.: a cloud-burst broke over this city at 10 p. m., doing great damage by the water bursting the sewers and overflowing the streets. The damage is widespread.—*Commercial Gazette, Pittsburgh, Pa., July 3.* Franklin, Venango Co.: this section was visited by a terrific wind and rain storm which caused great losses to the farmers and oil producers. Hundreds of derricks were blown down, and south of the city several barns were blown over, while the damage to growing crops is heavy.—*Post, Pittsburgh, Pa., July 4. Iowa.*—Dubuque: a storm, moving from northwest to east, began 3.40 p. m., attended by high wind, loud thunder, and vivid lightning. The rainfall for the first ten minutes was 0.67 inch; it subsided for about ten minutes and then fell heavier than before, 2.00 inches being recorded in fifty minutes. The sewers being insufficient to carry off the water, the streets were soon flooded. Three persons were struck by lightning, one being killed. The rain storm was